

Fairchild's Negative Voltage Swing Audio Switches

Fairchild is quick to provide Switch solutions to new and emerging applications. One such trend is the rising popularity of Capacitor-Free Headphone drivers in applications such as cell phones, MP3 players and other ultra-portable devices. Use of these amplifiers is being driven by the market need to improve audio signal quality without impacting battery life. Negative swing amplifiers are capable of delivering up to 4x more power to a speaker than a single ended amplifier without a noticeable decrease in battery life. To support this trend, a need also arises for the circuits surrounding these amplifiers to be able to also support negative voltage swings. Fairchild's new breed of Negative Swing capable Audio Switches supports this trend with a growing selection of switch configurations and functions.

Negative Voltage Swing Switch Advantages

Negative Swing Amplifiers and Analog Audio Switches allow designers to remove AC coupling capacitors in speaker based applications. This approach allows for greater signal amplitude to be delivered to the speakers, without adversely impacting battery life. This approach also significantly reduces the audio 'popping' associated with the use of capacitors on the amplifier outputs. In addition, Negative Swing Audio Switches deliver the added benefit of improved signal fidelity with the elimination of signal clipping. Fairchild's new negative swing audio switches can easily handle negative swing audio signals up to -2 volts while maintaining full signal integrity. Add in the cost and space savings from the eliminated capacitors and you have a winning solution.

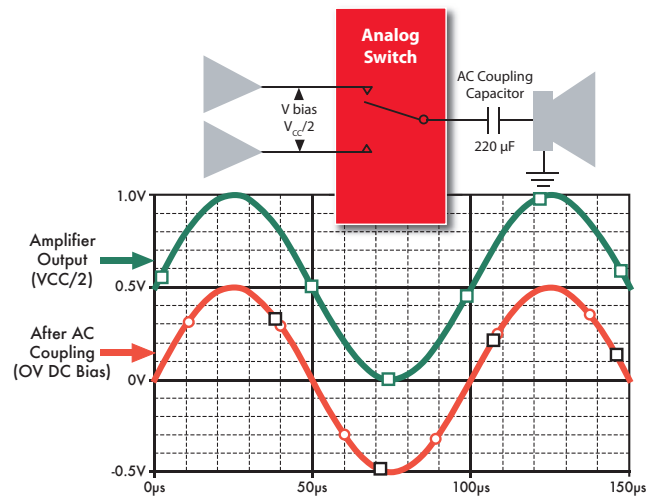


Figure 1: Standard Analog Switch

Switch Selection Criteria & Fairchild's Advantages

Fairchild switch designs address many key selection criteria including functions, package, performance and cost. Putting the highest performance switch in the smallest package possible has been our trademark.

Audio Switches with Negative Voltage Swing capability are available in various configurations (1 to 3x SPDT, 2x SP3T, USB + Audio, USB+Audio+Video) to support most of today's designs. Our Multi-Function Switches combine Audio, USB 2.0 (Full Speed and Hi-Speed) and video signal switching capabilities. Package offerings should meet most needs and include space saving MicroPak™, uMLP, MLP, SC70 and MSOP. Key performance parameters include Low On Resistance (R_{ON}) and Low I_{CCT} to minimize power consumption, Low THD and Low Capacitance preserve audio signal quality, while industry leading ESD protection and over-voltage tolerance protect the switch and surrounding circuits.

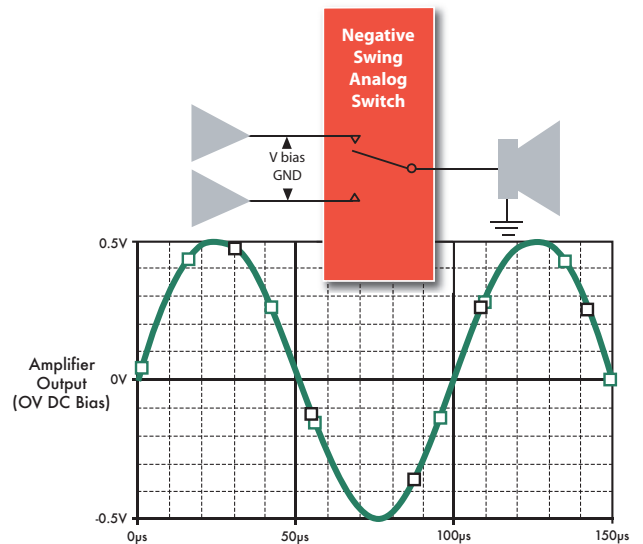


Figure 2: Negative Swing Analog Switch

Above: Because the switch can pass negative signals, two amplifiers with OV Bias can share a single speaker without AC coupling.